



DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

NOTICE OF ACCEPTANCE (NOA)

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION

11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
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www.miamidade.gov/economy

3M Company
3M Center Building 0220-05-E-06
St. Paul, MN. 55144-1000

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER -Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the Florida Building Code including the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: 3M™ 2-Component Foam Roof Tile Adhesive AH-160

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA revises NOA 12-0228.18 and consists of pages 1 through 11.
The submitted documentation was reviewed by Juan E. Collao, R.A.



NOA No.: 13-0502.02
Expiration Date: 05/10/17
Approval Date: 12/12/13
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ROOFING COMPONENT APPROVAL:

Category: Roofing
Sub Category: Roof tile adhesive
Materials: Polyurethane

SCOPE:

This approves **3M™ 2-Component Foam Roof Tile Adhesive AH-160** as manufactured by **3M Company** as described in Section 2 of this Notice of Acceptance. For the locations where the design pressure requirements, as determined by applicable building code, does not exceed the design pressure values obtained by calculations in compliance with Roofing Application Standard RAS 127, for use with approved flat, low, and high profile roof tiles system using 2-Component Foam Roof Tile Adhesive AH-160. Where the attachment calculations are done as a moment based system for single patty placement, and as an uplift based system for double patty systems

PRODUCTS MANUFACTURED BY APPLICANT:

<u>Product</u>	<u>Dimensions</u>	<u>Test Specifications</u>	<u>Product Description</u>
3M™ 2-Component Foam Roof Tile Adhesive AH-160	N/A	TAS 101	Two component polyurethane foam adhesive
Foam Dispenser RTF1000	N/A		Dispensing Equipment
ProPack® 30 & 100	N/A		Dispensing Equipment

PRODUCTS MANUFACTURED BY OTHERS:

Any Miami-Dade County Product Control Accepted Roof Tile Assembly having a current NOA which list moment resistance values with the use of 2-Component Foam Roof Tile Adhesive AH-160 roof tile adhesive.

MANUFACTURING LOCATION:

1. Tomball, TX.

PHYSICAL PROPERTIES:

<u>Property</u>	<u>Test</u>	<u>Results</u>
Density	ASTM D 1622	1.6 lbs./ft. ³
Compressive Strength	ASTM D 1621	18 PSI Parallel to rise 12 PSI Perpendicular to rise
Tensile Strength	ASTM D 1623	28 PSI Parallel to rise
Water Absorption	ASTM D 2127	0.08 Lbs./Ft ²
Moisture Vapor Transmission	ASTM E 96	3.1 Perm / Inch
Dimensional Stability	ASTM D 2126	+0.07% Volume Change @ -40° F., 2 weeks +6.0% Volume Change @158°F., 100% Humidity, 2 weeks
Closed Cell Content	ASTM D 2856	86%

Note: The physical properties listed above are presented as typical average values as determined by accepted ASTM test methods and are subject to normal manufacturing variation.



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EVIDENCE SUBMITTED:

<u>Test Agency</u>	<u>Test Identifier</u>	<u>Test Name/Report</u>	<u>Date</u>
Center for Applied Engineering	#94-060	TAS 101	04/08/94
	257818-1PA	TAS 101	12/16/96
	25-7438-3	SSTD 11-93	10/25/95
	25-7438-4		
	25-7438-7	SSTD 11-93	11/02/95
	25-7492	SSTD 11-93	12/12/95
Miles Laboratories Polymers Division	NB-589-631	ASTM D 1623	02/01/94
Ramtech Laboratories, Inc.	9637-92	ASTM E 108	04/30/93
Southwest Research Institute	01-6743-011	ASTM E 108	11/16/94
	01-6739-062b[1]	ASTM E 84	01/16/95
Trinity Engineering	7050.02.96-1	TAS 114	03/14/96
	P36700.04.12	ASTM D 1623	04/18/12
	P39740.02.12	TAS 101	02/21/12
		TAS 123	
Celotex Corp. Testing Services	528454-2-1	TAS 101	10/23/98
	528454-9-1		
	528454-10-1		
	520109-1	TAS 101	12/28/98
	520109-2		
	520109-3		
	520109-6		
	520109-7		
	520191-1	TAS 101	03/02/99
	520109-2-1		

LIMITATIONS:

1. Fire classification is not part of this acceptance. Refer to the Prepared Roof Tile Assembly for fire rating.
2. All approved products listed herein shall be labeled and shall bear the imprint or identifiable marking of the manufacturer's name or logo and following statement: "Miami-Dade County Product Control Approved" or the Miami-Dade County Product Control Seal as shown below.



3. 3M™ 2-Component Foam Roof Tile Adhesive AH-160 shall solely be used with flat, low, & high tile profiles.
4. Minimum underlayment shall be in compliance with the Roofing Application Standard RAS 120.
5. Roof Tile manufactures acquiring acceptance for the use of 3M™ 2-Component Foam Roof Tile Adhesive AH-160 roof tile adhesive with their tile assemblies shall test in accordance with TAS 101.
6. All products listed herein shall have a quality assurance audit in accordance with the Florida Building Code and Rule 9N-3 of the Florida Administrative Code.



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INSTALLATION:

1. 3M™ 2-Component Foam Roof Tile Adhesive AH-160 may be used with any roof tile assembly having a current NOA that lists uplift resistance values with the use of 3M™ 2-Component Foam Roof Tile Adhesive AH-160.
2. 3M™ 2-Component Foam Roof Tile Adhesive AH-160 shall be applied in compliance with the Component Application section and the corresponding Placement Details noted herein. The roof tile assembly's adhesive attachment with the use of 3M™ 2-Component Foam Roof Tile Adhesive AH-160 shall provide sufficient attachment resistance, expressed as an uplift based system, to meet or exceed the uplift resistance determined in compliance with Miami-Dade County Roofing Application Standards RAS 127. The adhesive attachment data is noted in the roof tile assembly NOA.
3. 3M™ 2-Component Foam Roof Tile Adhesive AH-160 and its components shall be installed in accordance with Roofing Application Standard RAS 120, and 3M Company's 3M™ 2-Component Foam Roof Tile Adhesive AH-160 Operating Instruction and Maintenance Booklet.
4. Installation must be by a Factory Trained 'Qualified Applicator' approved and licensed by 3M Company. 3M Company shall supply a list of approved applicators to the authority having jurisdiction.
5. Calibration of the Foam Dispenser RTF1000 dispensing equipment is required before application of any adhesive. The mix ratio between the "A" component and the "B" component shall be maintained between 1.0-1.15 (A): 1.0 (B).
6. 3M™ 2-Component Foam Roof Tile Adhesive AH-160 shall be applied with Foam Dispenser RTF1000 or ProPack® 30 & 100 dispensing equipment only.
7. 3M™ 2-Component Foam Roof Tile Adhesive AH-160 shall not be exposed permanently to sunlight.
8. Tiles must be adhered in freshly applied adhesive. Tile must be set within 1 to 2 minutes after 3M™ 2-Component Foam Roof Tile Adhesive AH-160 has been dispensed.
9. 3M™ 2-Component Foam Roof Tile Adhesive AH-160 placement and minimum patty weight shall be in accordance with the 'Placement Details' herein. Each generic tile profile requires the specific placement noted herein.



Table 1: Adhesive Placement For Each Generic Tile Profile

Tile Profile	Placement Detail	Minimum Paddy Contact Area	Minimum Paddy Gram Weight
Eave Course - Flat, Low, High Profiles	All Eave Course	17-23 sq. inches	45-65
Flat, Low, High Profiles	#1	17-23 sq. inches	45-65
Flat Profile	#2	10-12 sq. inches	30
Low Profile	#2	12-14 sq. inches	30
High Profile	#2	17-19 sq. inches	30
Flat, Low, High Profiles	#3	Two Paddys: 8-9 sq. inches at head of tile 9-11 sq. inches at overlap	12 grams per paddy
Two-Piece Barrel (Cap Tile)	Two Piece	2 Beads (1 each longitudinal edge) 20-25 sq. inches each bead	17 grams per bead
Two Piece Barrel (Pan Tile)	Two Piece	65-70 sq. inches	34 grams under pan

LABELING:

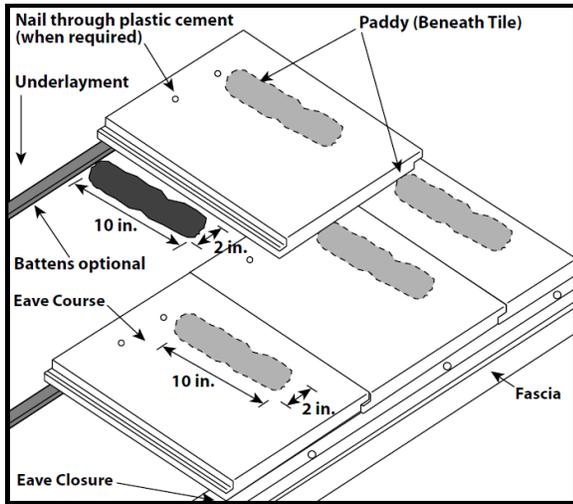
All 3M™ 2-Component Foam Roof Tile Adhesive AH-160 containers shall comply with the Standard Conditions listed herein.

BUILDING PERMIT REQUIREMENTS:

As required by the Building Official or applicable building code in order to properly evaluate the installation of this system.

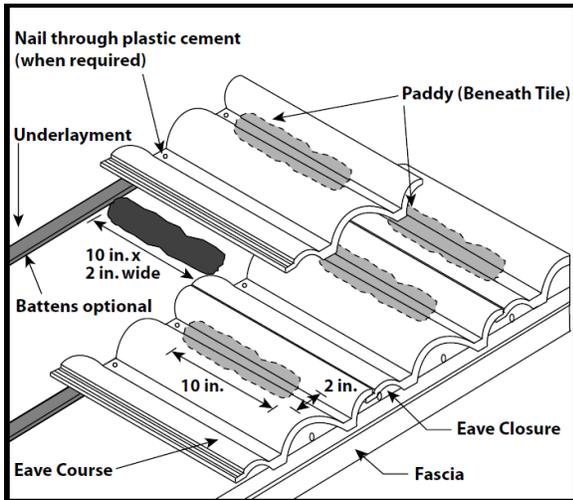


ADHESIVE PLACEMENT DETAIL # 1



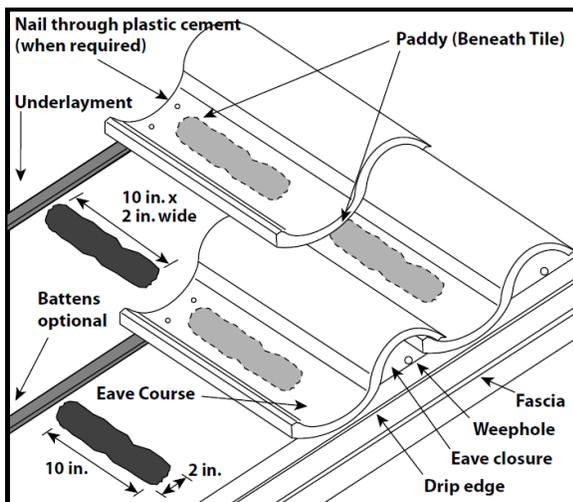
Flat/Low Profile Tile

1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown, under the strengthening rib closest to the overlock of the tile being set.
2. Continue in same manner. Insure approximately 17 (109.7 cm²) – 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.



Medium Profile / Double Pan Tile

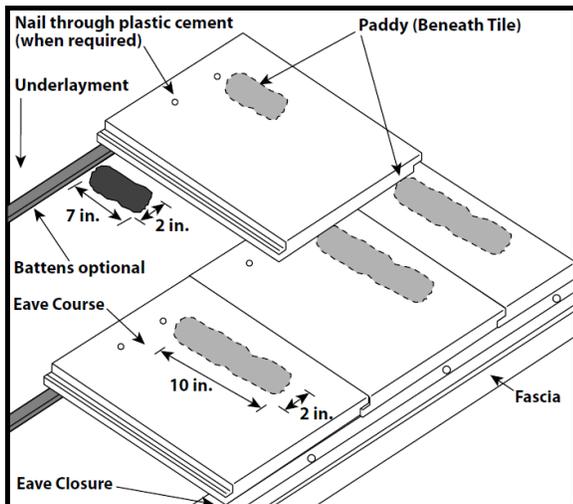
1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set.
2. Continue in same manner. Insure approximately 17 (109.7 cm²) – 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.



High Profile / Single Pan Tile

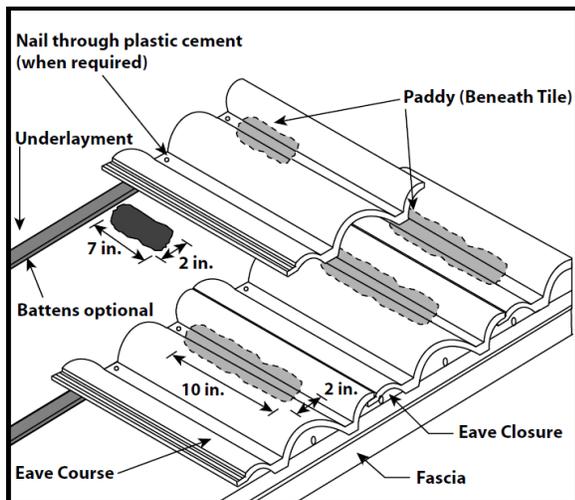
1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set.
2. Continue in same manner. Insure approximately 17 (109.7 cm²) – 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.

ADHESIVE PLACEMENT DETAIL # 2



Flat/Low Profile Tile

1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the strengthening rib of the tile closest to the overlock of the tile being set. Insure approximately 17 (109.7 cm²) – 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.
2. At the second course, apply a minimum 2" (50.8mm) x 7" (177.8 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the strengthening rib closest to the overlock of the tile being set.
3. Continue in same manner. Insure approximately 10" (64.5 cm²) - 12 (77.4 cm²) square inch adhesive contact with the underside of the tile.

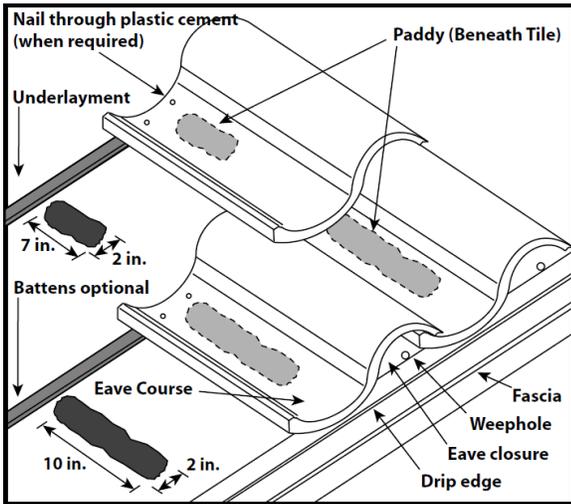


Medium Profile / Double Pan Tile

1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set. Insure approximately 17 (109.7 cm²) – 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.
2. At the second course, apply a minimum 2" (50.8mm) x 7" (177.8 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set.
3. Continue in same manner. Insure approximately 12" (77.4 cm²) - 14 (90.3 cm²) square inch adhesive contact with the underside of the tile.

(Instructions continued on next page)

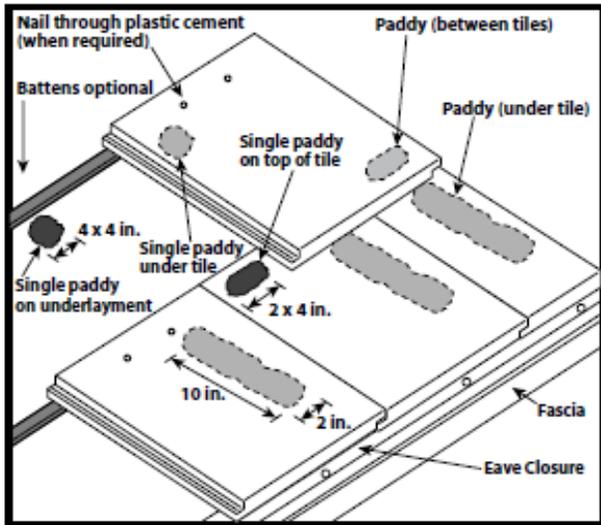
ADHESIVE PLACEMENT DETAIL # 2 (CONTINUED)



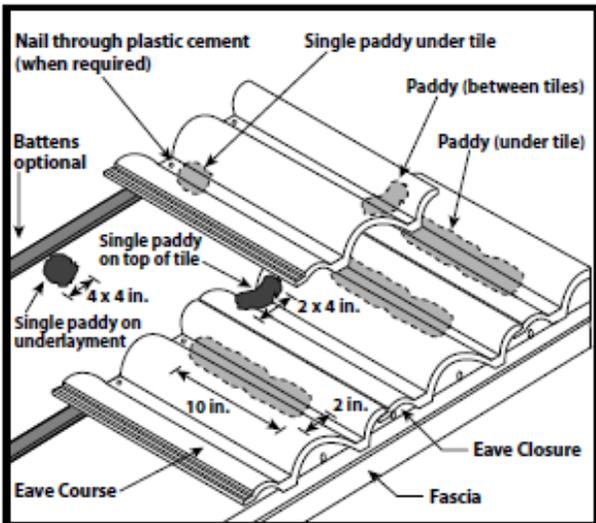
High Profile / Single Pan Tile

1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set. Insure approximately 17 (109.7 cm²) – 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.
2. At the second course, apply a minimum 2" (50.8mm) x 7" (177.8 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set.
3. Continue in same manner. Insure approximately 17" (109.7 cm²) - 19 (122.6 cm²) square inch adhesive contact with the underside of the tile.

ADHESIVE PLACEMENT DETAIL # 3



Flat/Low Profile Tile

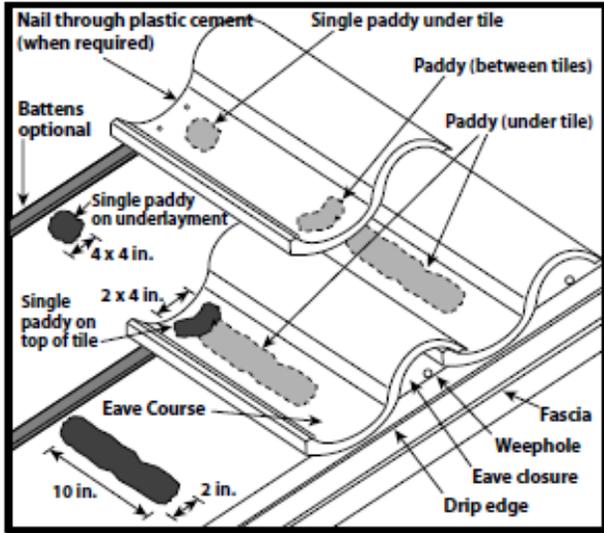


Medium Profile Tile

1. On the eave course only, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown, under the strengthening rib for flat tile or under the pan portion of the tile for low or high profile tile closest to the overlock of the tile being set. Leave approximately 4" (101.6 mm) up from the eave edge free of foam to prevent the expanded adhesive from blocking the weep holes. Insure approximately 17-23 in² (109.7-148.4 cm²) of adhesive contact with the underside of the tile
2. Apply a 4" (101.6 mm) x 4" (101.6 mm) x 1" (25.4 mm) foam paddy onto the underlayment just below the second course line positioned foam paddy under the strengthening rib for flat tile, or under the pan portion of the tile, closest to the underlock for the second course tile to be installed. Insure approximately 8-9 in² (51.6-58.1 cm²) of adhesive contact with the underside of the tile.

(Instructions continued on next page)

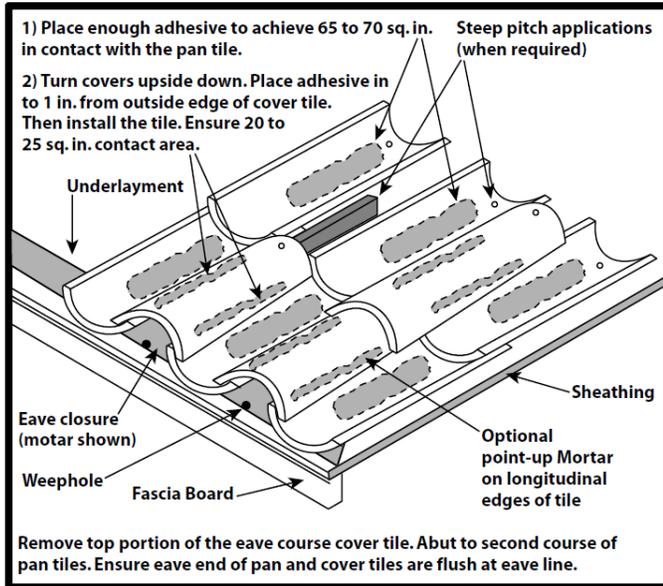
ADHESIVE PLACEMENT DETAIL # 3 (CONTINUED)



High Profile Tile

3. Also apply a 2" (50.8 mm) x 4" (101.6 mm) x 3/4" (19 mm) paddy on top of the eave course tile surface as shown, on top of the strengthening rib for flat tile or on top of the pan portion of the tile, closest to the underlock of the first course of tile. Install second course of tile. Insure approximately 9 (58.1 cm²) - 11 (71cm²) square inch adhesive contact with the underside of the tile at the overlap and 7 (45.2 cm²) - 9 (58.1 cm²) square inch adhesive contact with the underside of the tile at the head of the tile. Continue in same manner.

ADHESIVE PLACEMENT DETAIL TWO PIECE BARREL



Two Piece Barrel - High Profile Tile

Two Piece Barrel (Cap and Pan) Tile

1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under two adjacent pan tiles. Support eave tiles from rocking until adhesive has a chance to cure.
2. Continue in same manner bringing two pan courses up toward the ridge. Insure approximately 65 (419.4 cm²) – 70 (451.6 cm²) square inch adhesive contact with the underside of the pan tile.
3. Turn covers upside down exposing the underside of the tile. Apply a minimum 1" (25.4 mm) x 10" (254 mm) bead of adhesive directly on the inner edge of each side of the cover tile. Leave approximately 3/4" (19 mm) to 1" (25.4 mm) from the outside edge of the tile, inward, free of foam to allow for expansion.
4. Turn cover tile over after foam is applied and place onto pan tile course. Insure a minimum of 20 (129 cm²) - 25 (161.3 cm²) square inch contact area on each side of the cover tile to the pan tile. Continue in same manner. Trim away any cured exposed foam adhesive. Pointing of longitudinal edges of the cover tiles are considered optional.
5. When additional nailing is required, 2" (50.8 mm) x 4" (101.6 mm) nailers or the tie wire system using galvanized, stainless steel, or copper wire and compatible nails may be used.

END OF THIS ACCEPTANCE